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CORRES. CONTROL
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DIST.	LTR	ENC
BENEDETTI, R.L.		
BENJAMIN, A.		
BERMAN, H.S.		
CARNIVAL, G.J.		
COPP, R.D.		
CORDOVA, R.C.		
DAVIS, J.G.		
FERRERA, D.W.		
FRANZ, W.A.		
HANNI, B.J.		
HEALY, T.J.		
HEDAHL, T.G.		
HILBIG, J.G.		
HUTCHINS, N.M.		
KIRBY, W.A.		
KUESTER, A.W.		
MAHAFFEY, J.W.		
MANN, H.P.		
MARX, G.E.		
McKENNA, F.G.		
MORGAN, R.V.		
PIZZUTO, V.M.		
POTTER, G.L.		
SANDLIN, N.B.		
SATTERWHITE, D.G.		
SCHUBERT, A.L.		
SETLOCK, G.H.		
SULLIVAN, M.T.		
SWANSON, E.R.		
WILKINSON, R.B.		
WILSON, J.M.		
Keith SR	X	X
Stiger S	X	X

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Reviewed for Addressee
Corres. Control RFP

1-21-94 DATE BY

Ref Ltr. #
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DOE ORDER # 5400.1

RF-46522 (Rev. 9/93)

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JAN 21 10 11 AM '94 **Rocky Flats Office**

EG&G
ROCKY FLATS PLANT
CORRESPONDENCE CONTROL

JAN 2 0 1994

ER:FRL:00680

Selected Remedial Alternative for Operable Unit No. 4 Interim Measure/Interim Remedial Action

Steve R. Keith, Program Director
Solar Pond Projects
EG&G Rocky Flats, Inc.

This memorandum is responding to your correspondence (93-RF-15471, dated December 20, 1993) describing the selected remedial alternative for Operable Unit No. 4, Solar Evaporation Ponds Phase I Interim Measure/Interim Remedial Action project. The DOE agrees that the remediation alternative described in your correspondence (attached) accurately reflects our understanding. Further, we would like the Solar Ponds Program briefing, requested by Rocky Flats Office memorandum ERD:FRL:13498, dated December 28, 1993, to similarly reflect this remedial alternative and related schedules and costs.

Please contact me at extension 7846 if you require any additional clarification relative to the remedial alternative selection.

Frazer R. Lockhart
Solar Ponds Program Manager
Environmental Restoration

Attachment

JAN 2 0 1994

S. Keith
ER:FRL:00680

cc w/Attachment:
R. Schassburger, AMER, RFO
S. Surovchak, AMPME, RFO
S. Howard, WP, RFO
P. Witherill, ER, SMS

CORRES. CONTROL
OUTGOING LTR NO.

DOE ORDER #
93RF15471

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AMARAL, M.E.		
BENEDETTI, R.L.		
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BERMAN, H.S.		
BRANCH, D.B.		
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HEDAHL, T.		
HILBIG, J.G.		
KIRBY, W.A.		
KUESTER, A.W.		
MANN, H.P.		
MARX, G.E.		
McDONALD, M.M.		
McKENNA, F.G.		
MONTROSE, J.K.		
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POTTER, G.L.		
PIZZUTO, V.M.		
RILEY, J.H.		
RISING, T.L.		
SANDLIN, N.B.		
SETLOCK, G.H.		
STEWART, D.L.		
SULLIVAN, M.T.		
SWANSON, E.R.		
WILKINSON, R.B.		
WILLIAMS, S. (ORC)		
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CLASSIFICATION:

UCNI		
UNCLASSIFIED		
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE
DOCUMENT CLASSIFICATION REVIEW WAIVER PER CLASSIFICATION OFFICE

DATE

IN REPLY TO RFP CC NO:

ACTION ITEM STATUS
☐ PARTIAL/OPEN
☐ CLOSED

LTR APPROVALS:

ORIG & TYPIST INITIALS

Stiger

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EG&G ROCKY FLATS

EG&G ROCKY FLATS, INC.
ROCKY FLATS PLANT, P.O. BOX 464, GOLDEN, COLORADO 80402-0464 • (303) 966-7000

RECEIVED

December 20, 1993

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93-RF-15471

F. R. Lockhart
Director
Environmental Restoration Division
DOE,RFO

SELECTED REMEDIAL ALTERNATIVE FOR OPERABLE UNIT 4/SOLAR EVAPORATION PONDS PHASE I IM/IRA PROGRAM - SRK-276-93

In accordance with the Rocky Flats Interagency Agreement (IAG) signed by the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA) and Colorado Department of Health (CDH) on January 22, 1991, a remediation technology and strategy has been selected for Operable Unit 4 (OU 4)/Solar Evaporation Ponds (SEP) Phase I Interim Measure/Interim Remedial Action (IM/IRA) Program which shall be protective of human health and the environment. On December 14, 1993, the Joint Working Team, which includes representatives from DOE, EPA and CDH reached concensus regarding the selected remedial alternative for the OU 4 Phase I IM/IRA Program (See Attachment).

The IM/IRA Decision Document shall be designed to close/remediate OU 4 with a Resource Conservation and Recovery Act (RCRA) equivalent "engineering barrier" which shall encapsulate/isolate Individual Hazardous Substance Site (IHSS) 101. In addition, the liners within the ponds are expected to be left in place and, limited contaminated soil on the North Hillside of the SEP will be removed and placed in one or more of the SEP impoundments. The placement of contaminated soil in the SEP shall be performed in accordance with the Corrective Action Management Unit (CAMU) regulations which are anticipated to be promulgated within four to six months by the state of Colorado. This position/strategy regarding CAMU Regulations is consistent with guidance from the Colorado Department of Health submitted to DOE and EG&G on December 14, 1993 (See Attachment).

In addition to the above referenced remediation strategy, the "Proposed IM/IRA Decision Document" (scheduled to be submitted to EPA/CDH on May 11, 1994) is expected to address the substantive requirements of the Colorado "Rules and Regulations Pertaining to Solid and Hazardous Wastes", 6CCR 1007-2. In general, these regulations require the facility owner/operator to demonstrate compatibility with human health and the environment for 1,000 years.

EG&G believes the DOE,RFO specifically concurs with this environmental remediation strategy for OU 4 Phase I IM/IRA Program. If our understanding is in any way in error, please inform me immediately. We will assume our understanding is correct and will proceed accordingly if we have not been informed to the contrary by December 23, 1993.

If you have any questions regarding this matter, please contact R. T. Ogg on extension 8608 or J. A. Ledford on extension 8673.

A R Keith

S. R. Keith
Director
Solar Pond Projects
EG&G Rocky Flats, Inc.

RTO:bep

Attachment:
As Stated

Orig. and 1 cc - F. R. Lockhart

cc:.
M. A. Witherill - DOE, RFO

ENGINEERING-SCIENCE, INC.
1700 Broadway, Suite 900 Denver, Colorado 80290
phone: (303) 831-8100 • telecopy (303) 831-8208

MEETING NOTES

TO: Distribution

DATE: December 15, 1993

FROM: Philip Nixon

MEMO #: SP307:121593:01

PROJECT #: Solar Pond IM/IRA

ATTENDANCE:

Harlan Ainscough, CDH
Mark Austin, EG&G
Phil Nixon, ES
Richard Henry, ES
Andy Ledford, EG&G
Alan MacGregor, ERM
John Haasbeek, ERM
Frazer Lockhart, DOE/SMS
Dave Ericson, EG&G
Steve Howard, ERM
Rick Wilkinson, ES
Dave Myers, ES
Peg Witherill, DOE
Arturo Duran, EPA

DISTRIBUTION:

Attendees
L. Benson
A. Conklin
P. Breen
H. Heidkamp
K. Cutter
S. Stenseng
A. Fricke
R. Stegen
T. Kuykendall
T. Evans
B. Cropper
C. Montes
B. Wallace, EG&G (Admin. Record) (2)
K. Ruger, EG&G
K. London, EG&G
Martin McBride
Helen Belencan, DOE
Steve Cook
Joe Schieffelin, CDH
Steve Paris, EG&G
Ted Kearns, DOE/KMI
Bob Segris, LATO
Randy Ogg, EG&G
Steve Keith, EG&G

SUBJECT: Weekly Status Meeting

1.) **Introductions**

Andy Ledford introduced Dave Ericson as the EG&G design and construction manager for the OU4 IM/IRA. He also introduced Erika Atchison as the OU4 Program Administrator.

The purpose of the meeting was to determine a path forward for the conceptual design of a selected remedial/closure alternative. The discussions focused on the different media (contaminated media, liners, and hotspots). It was noted that regulatory approval was not expected at this time, but an agreement on a path forward was needed that would be approved if DOE demonstrated that it would be implemented in a manner which would be protective of human health and the environment.

2.) **Contaminated Media**

Contaminated media is defined as soils outside the area under the proposed engineered cover that have concentrations which exceed the Preliminary Remediation Goals (PRGs). Hot spots are defined as materials under the area of the proposed engineered cover that have concentrations exceeding the PRGs and present an unacceptable risk to human health and the environment as demonstrated through vadose zone transport modeling to groundwater.

Phil Nixon presented the areal extent of the contaminated media on the north hillside and presented an estimated volume of material that exceed the PRGs and Land Disposal Restriction concentrations.

It was agreed that soils exceeding PRGs could be consolidated under the engineered cover without enacting a Corrective Actions Management Unit (CAMU) concept. However, soils exceeding their LDR levels could not be consolidated under the engineered cover. There is approximately 3,000 cubic yards of soil that exceed the LDR concentrations. It was discussed that additional testing of archived RFI/RI samples for TCLP concentrations might demonstrate compliance with the LDR concentrations. The RFI/RI results are based on a total metals analysis. A reduction in the OU4 concentration would be dependent upon the actual dilution factor being greater than the regulatory default value of 20. EG&G will pursue TCLP analysis or sensitivity analysis to determine if the north hillside soil concentrations are less than the LDR concentrations.

Harlan Ainscough indicated that the Colorado Hazardous Waste Control Commission is considering adopting the CAMU rule. He specified that its acceptance was likely and recommended that DOE prepare the IM/IRA assuming that it would be adopted.

It was agreed that DOE would prepare the IM/IRA specifying that radiologically-contaminated hillside soils and soils that do not have an LDR concern may be consolidated under the covered area. It is likely that contaminated soils from the berms to the seep areas will be consolidated, but that soils north of the seep areas that are impacted by groundwater will be addressed by the Phase II program. It will be assumed

that the CAMU concept will be adopted by CDH. DOE will develop a contingency plan if the CAMU concept is not adopted. The contingency plan may consist of:

1) additional TCLP analysis to demonstrate compliance with LDR concentrations
2) excavate and dispose of soils exceeding LDR concentrations
3) extend the engineered cover over the areas where LDR concentrations are exceeded.

The IM/IRA document will have to justify the use of the CAMU concept.

3) Liners

Frazer Lockhart agreed that DOE would excavate portions of the liners and subgrade if it was determined that this was necessary to be protective of human health and the environment. Leaving the liners in-place would provide a protective barrier against liquids migrating to the subgrade materials and would provide a stable base for construction of an engineered cover. Harlan Ainscough specified that the liners could remain in place if DOE could demonstrate that the impacts to groundwater from horizontal and vertical migration were insignificant and protective of human health and the environment for 1000 years. Harlan indicated that CDH believes the geology/hydrogeology of the site are not adequate to meet the 1000 years siting criteria. However, engineering remedies/ upgrades may be acceptable for preventing adverse impacts for the 1000 year period. The siting requirements will be identified as location-specific ARARs.

It was agreed that the liners could remain in place if it could be demonstrated that the entire remedial alternative would be protective of human health and the environment and prevent groundwater contact with the liners and contaminated media for 1000 years. Protection of groundwater must consider both vertical and lateral migration. It was agreed that this does not mean that the engineered barrier must be designed for a passive life span of 1000 years.

DOE will provide vadose zone modeling results to demonstrate the protection of human health and the environment. Performance modeling will also be used to determine the requirements of the engineered barrier.

Harlan specified that the engineered cover would only have to be designed for a 30-year life span if the liners were removed. Frazer Lockhart indicated that DOE might have a difficult time selling a 30-year design to the public.

It was agreed that an engineered cover could be selected as the OU4 IM/IRA if the above-mentioned requirements were adequately addressed.

Arturo Duran stated that it would be possible to remove and consolidate the liners within one of the Solar Evaporation Ponds. It was agreed that this was an option that could be considered.

Alan MacGregor discussed the potential to phase the construction of the engineered barrier such that it could be assessed after the post-closure period whether a 1000 year life span was required. Phil Nixon presented a flow diagram that could be followed to implement this approach. It was agreed that this option could also be considered.

4.) **Performance Objectives**

Phil Nixon provided the team with a trip report from the meetings in Hanford and discussed the applicability of the Hanford design criteria to the OU4 site. It was agreed that the engineered cover should:

1.) should be designed to function in a semi-arid region
2.) should be designed to minimize infiltration
3.) should function with minimal maintenance
4.) should minimize animal intrusion
5.) should minimize erosion
6.) should comply with RCRA/CERCLA requirements

It was agreed that the engineered cover design should not address the prevention of human intruders. The prevention of human intruders should be addressed in the future by a sitewide Record of Decision.

Frazer Lockhart specified that the design assumptions made at Hanford should be assessed for their applicability at Rocky Flats. The environmental conditions and levels of contaminants are different between the two sites. For example, the radiological soil concentrations at Hanford are 4-5 orders of magnitude higher than the concentrations in Rocky Flats soils.

5.) Phase II RFI/RI Status

Richard Henry requested if an additional 2 weeks could be added to the schedule for the Phase II RFI/RI workplan once the task was held up in procurement. Andy Ledford said that he would prefer to submit the workplan at the same time as the round table IM/IRA draft. Frazer Lockhart indicated that it might be possible since an IAG date would not be missed.

6.) Phase I RFI/RI Drilling in Ponds 207C and 207B-South

It was discussed that drilling in Pond 207B was scheduled at the end of December, and drilling in Pond 207C was scheduled ate the end of March. It was agreed that both the ponds could be drilled at the end of March to save the cost of multiple mobilization and demobilization costs.

7.) Building 788

There is uncertainty whether the removal of Building 788 is in or out of the OU4 IM/IRA. DOE wishes to remove the building for re-use as soon as possible to meet waste

management needs elsewhere on site, and utilize funding available in FY94. If Building 788 is put back into the OU4 IM/IRA, then there should be no impact to the current IM/IRA schedule because there is a current contract for the building removal. The document should be ready for submittal with the IM/IRA.

8.) Conclusion

The following agreements were listed on the chalkboard during the meeting to guide the Alternative II design.

1.) Consolidate Pu/Am/U and constituents less than LDRs into the Ponds.
2.) TCLP for Ni/Cd to calculate LDRs.
3.) Provide protection of constituents exceeding LDRs
   - consolidate contaminants exceeding LDRs
   - hot spot removal/treatment/disposal
   - extend engineered cover
4.) Liners may remain provided that groundwater is protected
   - lateral flow presence
   - contaminant transport less than LDR/PRG
5.) Overall solution protective for 1000 years.

Philip Nixon, Project Manager